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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,137	02/22/2002	Takeshi Takezawa	112007	1665

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Oliff & Berridge
PO Box 19928
Alexandria, VA 22320

EXAMINER

KOVAL, MELISSA J

ART UNIT PAPER NUMBER

2851

DATE MAILED: 11/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/069,137

Applicant(s)

TAKEZAWA ET AL.

Examiner

Melissa J Koval

Art Unit

2851

-- *Th MAILING DATE of this communication appears on th cov r sh t with th corr spondence address --*
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2003 and 20 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5,7-13 and 15-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10,11 and 16 is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7-9 and 12-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). 0703.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 5, 7, 8, 12-15 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsutake et al. ('367), Figure 12 in view of Figure 2.

Refer to Figures 2 and 12 of Mitsutake et al. ('367), for example.

Claim 1 sets forth: "A projector comprising:

an illumination optical system for emitting a light (light source 71, reflecting mirror 72, heat cut filter 73 and a first condenser lens 74);

an electro-optical device (any of liquid crystal light bulbs 76_R, 76_G, or 76_B) for modulating the light emitted from the illumination optical system in response to image information;

a projection optical system for projecting a modulated light generated by the electro-optical device (projection lens 78); and

an optical component (any of polarizing conversion units 40_R, 40_G, or 40_B) having a rock crystal member composed of rock crystal, the optical component being located in an optical path including the illumination optical system and the projection optical system, the rock crystal member being disposed not to change a polarizing state of light passing through the rock crystal member."

Refer to Figure 2, wherein unit 20 of the plate-like polarizing element is shown. Unit 20 further comprises wavelength plates 23_1 and 23_2 that can be formed of a crystalline material such as rock crystal. Refer to column 5, lines 21 through 67, wherein Mitsutake et al. ('367) suggests that the unit 20 may be modified a number of ways.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design polarizing conversion units 40_R , 40_G , or 40_B in view of the teachings disclosed by Mitsutake et al. ('367) with respect to figure 2 and unit 20 shown therein, such that polarizing conversion units 40_R , 40_G , or 40_B will include materials such as rock crystal. The motivation for one having ordinary skill in the art to make such a design choice would be to select a desired index of refraction for illumination light passing through the rock crystal member and for predetermining thickness and orientation of the molecular axes of the optical component comprising the rock crystal member.

The rejection of claim 1 is maintained from the previous office action for the following reasons: The language added to claim 1 in the amendment of June 20, 2003 raises questions with respect to applicant's specification. For example on page 26 of the specification, lines 20-24, the following is set forth: "On the other hand, the arrangement as shown in Figure 4 advantageously prevents a decrease in contrast of the image light emitted from the liquid crystal light valve 300G, even when the polarizing state of the linearly polarized light (p-polarized light) through the rock crystal changes a little." Also refer to page 28 of applicant's specification, line 19-25, and page 29, lines 1-3, wherein the following is set forth: " It is further desirable that the rock crystal substrate 307G and

the polarizing plate 302Gi are arranged to make the light output from the rock crystal substrate 307G enter the polarizing plate 302Gi as shown in Fig.4. If the arrangement allows the light to enter the polarizing plate 302Gi and the rock crystal 307G in this sequence, insufficient accuracy of the adjusted relation between the Z axis of the rock crystal substrate 307G and the polarization axis p_a of the polarizing plate 302Gi causes the polarizing state of the linearly polarized light emitted from the polarizing plate 302Gi to be changed during passing through the rock crystal 307G.” These examples teach away from the following claim language: “the rock crystal member being disposed not to change a polarizing state of light passing through the rock crystal member.”

With respect to claims 2, 4, 5 and 7, the orientation of the axes of the rock crystal member with respect to the other optical components comprising the device and to the center axis of illumination light is again a matter of design choice as already discussed with respect to rejected claim 1 above.

The rejection of claims 2, 4, 5 and 7 is maintained. The language newly added to the claims does not make clear how the orientation of the Z axis of the rock crystal with respect to the electric vector of the linearly polarized light patentably distinguishes over the prior art of record, by achieving unexpected results in the operation of the projector, for example with respect to thermal conductivity of the rock crystal or temperature effects on optical components.

With respect to claim 8, refer to the arguments already presented above.

With respect to claims 12 and 17, refer again to the arguments applied to claim 1. Also refer to figure 12 of Mitsutake et al. ('367). Therein a color separation system,

comprising dichroic mirrors 81, 82 and reflecting mirror 83 as well as color combination system comprising dichroic mirrors 84, 86 and reflective mirror 85, is shown.

Furthermore with respect to claims 17 through 19, refer to column 5, lines 32 through 59, column 6, lines 26 through 67, and column 7, lines 1 through 14. Therein the concept of "a selector film formed on the rock crystal member to select light having wavelength in a predetermined range" is met.

With respect to claims 13 through 15, the orientation of the axes of the rock crystal member with respect to the other optical components comprising the device and to the center axis of illumination light is again a matter of design choice as already discussed with respect to rejected claims 1 and 12 above.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsutake et al. ('367), further in view of "Bob's Rock Shop: Smoky Quartz Crystal".

Consider the arguments applied to claims 1, 2, 4, 5, 7, 8, 12-15 and 17 above. Mitsutake et al. do not discuss the use of rock crystal for the lenses comprising their projection device. The reference is silent to the types of materials used therein. However, quartz crystals for use in lenses is well known in the art as taught by the article "Bob's Rock Shop: Smoky Quartz Crystal". Refer to page 2, the fourth full paragraph wherein the following is set forth: "Quartz crystals have the ability to rotate the plane of polarization of light and it's transparency finds applications in heat lamps, prisms, lenses and optical windows and flats." Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to fabricate

projection lens 78 from rock crystal, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Allowable Subject Matter

Claims 10, 11 and 16 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art neither shows nor suggests the structural details of claims 10, 11 and 16 are directed to the division of incident light into two different polarized lights, strata comprising the rock crystal members, or an X-shaped interface between rock crystal members, the X-shaped interface in particular being directed to claim 16.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

"Rock Crystal, the colorless variety of quartz", 2 pages, copyright 1995, 1996 by Amethyst Galleries, Inc.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa J Koval whose telephone number is (703) 308-4801. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russell Adams can be reached on Monday through Thursday at (703) 308-

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2847. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

MJK


MARK ADAMS
PATENT EXAMINER
UNIT 2800